Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of RADWIN LTD. Amendment of Part 15 of the Commission's Rules to Advance Improved Broadband Services in the U-NII-1 and U-NII-3 Bands	RM No. 11812

Comments of Alaska Communications Internet, LLC

Alaska Communications Internet, LLC ("Alaska Communications" or the "Company") files these comments in support of the above-captioned Petition for Rulemaking (the "Petition") filed by RADWIN Ltd. ("RADWIN").[1] The Petition requests that the Commission amend its rules to permit the operation of certain point-to-multipoint radios in the U-NII-1 (5150-5250 MHz) and U-NII-3 (5725-5850 MHz) bands under the same rules governing effective isotropic radiated power ("EIRP") levels as those that currently apply to point-to-point operations in those bands.

Alaska Communications agrees that this relief would produce significant public interest benefits, allowing providers to deliver fixed wireless broadband services at lower per-subscriber costs, particularly in rural areas where customers may be spread sparsely over large geographic areas. This change in the Commission's rules is particularly important for providers, such as Alaska Communications, that are using Connect America Fund ("CAF") Phase II support to deploy broadband Internet access service in unserved, high-cost areas of the nation using fixed wireless technology. Authorization to use U-NII base stations at the higher EIRP levels proposed in the RADWIN Petition will allow these providers to use their authorized CAF Phase II support more efficiently and effectively to reach the maximum number of customer locations.

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[1] *See* Public Notice, "Consumer & Governmental Affairs Bureau Reference Information Center Petition for Rulemakings Filed," Report No. 3097 (rel. June 29, 2018).

Background

The state of Alaska has a population of about 740,000 people, only slightly greater than that of the District of Columbia, yet the state encompasses about 1/6 of the total land area of the nation, larger than the District of Columbia and 22 other states combined.[2] Of those 740,000 people, half live in the state's three population centers of Anchorage, Fairbanks, and Juneau.[3] The other half are clustered in small, rural and remote communities that dot approximately 570,000 square miles of largely inaccessible wilderness. Rural areas of Alaska thus have by far the lowest population density in the nation.

Affiliates of Alaska Communications serve as incumbent local exchange carriers ("ILECs"), not only in Anchorage, Fairbanks, Juneau, and their surrounding rural areas, but also in approximately 50 Bush communities, which range in size from a few dozen to perhaps over 1,000 people.[4] In this role, Alaska Communications and its affiliates have accepted

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[2] *See* United States Census Bureau, State Area Measurements and Internal Point Coordinates, *available at:* https://www.census.gov/geo/reference/state-area.html (visited July 27, 2018) (showing the area of Alaska is greater than that of North Carolina, New York, Mississippi, Pennsylvania, Louisiana, Tennessee, Ohio, Virginia, Kentucky, Indiana, Maine, South Carolina, West Virginia, Maryland, Vermont, New Hampshire, Massachusetts, New Jersey, Hawaii, Connecticut, Delaware, Rhode Island, and the District of Columbia combined).

[3] *See* United States Census Bureau, Quick Facts: Anchorage Municipality, Fairbanks, Juneau, and State of Alaska, *available at:* https://www.census.gov/quickfacts/fact/table/juneaucityandboroughalaska,fairbankscityalaska,anchoragemunicipalityalaska,ak/PST045217 (visited July 27, 2018).

[4] Alaska's "Bush" communities are those that are isolated geographically from the infrastructure customarily available throughout most of the nation, including the areas in and around Alaska's three largest population centers, Anchorage, Fairbanks and Juneau. These Bush communities lack infrastructure resources commonly available elsewhere in the state, and the nation as a whole. Bush communities are generally inaccessible by road, and are not connected to the state's power grid. People, as well as goods and services, must arrive by plane, barge, snow machine, all-terrain vehicle, or other off-road transportation means. Communications services in these communities generally rely on satellite or terrestrial point-to-point microwave transport links to Anchorage, Fairbanks, or Juneau.

approximately $19.6 million annually in CAF Phase II support, and have committed to deploy broadband Internet access service to at least 31,571 customer locations, primarily in census blocks characterized by high costs of service that are unserved by any other broadband provider.[5]

Alaska Communications is meeting this commitment in many areas by deploying a fixed wireless broadband solution that incorporates the RADWIN base stations that would be covered by the rule change proposed in this Petition, operating primarily in the U-NII-3 band. In order to achieve the greatest availability of new broadband services to new customers and thereby maximize the public interest benefits of the limited CAF Phase II support available, it is vital that these base stations cover the greatest geographic area possible. Alaska Communications supports the RADWIN Petition because the relief it seeks would provide outsize benefits in achieving this goal.

Discussion

Amending Section 15.407(a) of the Commission's rules, 47 C.F.R. § 15.407(a), as requested in the RADWIN Petition, to allow devices that emit multiple directional beams, simultaneously or sequentially, for the purpose of directing signals into individual receivers or groups of receivers to operate under the emission rules applicable to fixed, point-to-point operations, would generate substantial public interest benefits. It would advance the Commission's broadband deployment goals by allowing more rapid and efficient deployment, including by recipients of CAF Phase II support. In addition, it would allow providers to overcome deployment challenges of distance, terrain, or clutter that impair the coverage of fixed wireless broadband services today. And, RADWIN has demonstrated that it could achieve these benefits with no material increase in harmful interference to other users of the band.

[5] *See Connect America Fund*, WC Docket No 10-90, Order, FCC 16-143, 31 FCC Rcd 12086 (2016), at ¶ 1.

A. The Commission Should Grant the RADWIN Petition to Advance the Goals of the Connect America Fund

The Commission's 2011 *Transformation Order* broadened the focus of the Commission's high-cost universal service support mechanisms as a tool to foster expanded availability of affordable broadband Internet access services, in addition to traditional voice telephony.[6] To that end, it created the Connect America Fund, as a foundation for, among other things, "incentive-based policies that encourage technologies and services that maximize the value of scarce program resources and the benefits to all consumers."[7]

CAF is supported, like all of the Commission's universal service support mechanisms, through revenue-based universal service contributions paid directly by providers of interstate and international, end-user, telecommunications services, and indirectly by consumers of those services through surcharges levied on monthly retail bills. As a result, it is a hallmark of good Commission stewardship of those mechanisms that the limited funds available be used efficiently and in ways that produce the greatest public interest benefits possible.[8]

For Alaska Communications to meet its CAF Phase II broadband deployment commitments, it is vital for the company to reach the greatest number of customer locations possible with each base station. In some areas, it is possible to reach all CAF Phase II-eligible customer locations with the base stations operating within the constraints of the Commission's prescribed EIRP levels for unlicensed radios in the 5.8 MHz band. In other areas, however,

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6 *Connect America Fund*, WC Docket No. 10-90, Report and Order and Further Notice of Proposed Rulemaking, FCC 11-161, 26 FCC Rcd 17663 (2011) ("*Transformation Order*"), at ¶ 14.

7 *Id.* at ¶ 11.

8 *Transformation Order* at ¶ 187 (observing that, in funding broadband deployment under CAF, the Commission must "ensure that the public interest obligations are achieved as cost-effectively as possible").

Alaska Communications has found that it cannot successfully provide broadband Internet access services within the constraints of the available tower infrastructure and the point-to-multipoint EIRP limits set forth in Section 15.407(a) of the Commission's rules.

By granting the RADWIN Petition, the Commission would allow Alaska Communications to reach a larger number of customer locations by operating the RADWIN base station at the full transmit power for which it was manufactured and designed (approximately 28 dBm), paired with an antenna that exceeds the 6 dBi limit prescribed for point-to-multipoint operations under Section 15.407(a)(3). The greater coverage enabled by this change would reduce deployment costs by 50 percent or more, as compared to the larger investment in tower and base station infrastructure needed to cover the same area under the current point-to-multipoint EIRP constraints. *First*, in rural and remote areas of Alaska, there are relatively few potential customers within the coverage radius of a single base station, meaning that the radios face no capacity constraints that would otherwise require more dense deployment. Using the U-NII-3 band, for example, one RADWIN base station can provide up to 750 Mbps, which is enough capacity to serve up to 64 customers taking service at the CAF Phase II minimum of 10 Mbps downstream. In Chena Hot Springs, for example, where Alaska Communications is deploying broadband Internet access service using these base stations, there are only about 40 potential customers within range, even if the Commission grants the relief sought by the RADWIN Petition.

Second, in rural and remote Alaska, there are often few available wireless towers, and it is costly to construct and operate new ones. In many cases, the only potentially economically viable option for delivering broadband Internet access service, even with CAF Phase II support to offset some of the cost, is to use existing towers, even if they are not located at the geographically optimal point from which to cover the target community. For example, to serve

Chena Hot Springs, Alaska Communications must use an existing tower located near Two Rivers, over 30 miles away. Without the increased power that would be authorized under the RADWIN Petition, Alaska Communications will be able to reach only about half of the customers in the community from that location. Constructing a new tower would be cost-prohibitive, both because of the direct construction costs of the tower itself, and because of the high cost of purchasing or deploying electric and telecommunications backhaul services to wilderness locations where neither may be available today.

Third, the relief RADWIN seeks would merely allow Alaska Communications to overcome severe attenuation that results from ground clutter in Alaska, rather than extending coverage potential far beyond the range that it would otherwise achieve over clear terrain under the existing point-to-multipoint rules. In many of the areas where Alaska Communications hopes to offer fixed wireless broadband Internet access service, vast spruce forests may lie between the tower and the target customers, producing severe attenuation of the 5 GHz signal compared to what could be achieved in clear terrain.[9] Thus, in Alaska, the relief the RADWIN Petition seeks would enable Alaska Communications primarily to overcome this attenuation and achieve coverage more comparable to what would otherwise be available over clear terrain under the existing point-to-multipoint rules.

[9] *See, e.g.,* Bruce Alan Fette *et al.*, *RF & Wireless Technologies* (Newnes 2008), at 208-09 ("Conifers are marked by the presence of needles, on the order of 3-15 cm long and a few millimeters in diameter. At 2 or 5 GHz, the needles mainly affect propagation when they happen to be aligned with the polarization of the incoming radiation. If the foliage is dense, unobstructed paths through the trees [that are] large compared with the wavelength are unlikely.").

B. RADWIN Has Demonstrated that the Proposed Rule Change Would Not Adversely Affect Any Other Party

In its *2014 U-NII Order*, the Commission declined a proposal to extend the U-NII-3 point-to-point power limits to point-to-multipoint operations, not because of any specific interference concerns, but merely because it was outside the scope of the proceeding.[10] As the Commission explained, "to increase the eligibility for higher antenna gain to point-to-multipoint systems would be an expansion of usage in the U-NII-3 band, and therefore is beyond our proposal to consolidate the Section 15.247 and the Section 15.407 rules in the U-NII-3 band."[11]

In 1997, the Commission, with NTIA's support, left open the possibility that it would examine the use of high gain transmit antennas with U-NII devices at1-watt transmitter power following further experimentation to ensure that such operations "would not cause interference to the primary service, Government radiolocation."[12] Advances in technology since 1997 have addressed this concern. Specifically, the relief the RADWIN Petition seeks is limited to devices that employ beamforming antennas that emit signals in multiple directions sequentially or simultaneously, effectively creating the equivalent of a series of point-to-point links, rather than a continuous omnidirectional or patterned point-to-multipoint transmission. And, the Commission has already recognized the low interference potential and great public interest benefits of these point-to-point links, finding that:

> The current rules allow service providers to deploy cost-effective wireless links in what would otherwise be considered high cost areas, and allow for the quick setup

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[10] *Revision of Part 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, ET Docket No. 13-49, First Report and Order, FCC 14-30, 29 FCC Rcd 4127 (2014), at ¶ 113.

[11] *Id.*

[12] *Amendment of the Commission's Rules to Provide for Operation of Unlicensed NII Devices in the 5 GHz Frequency Range*, ET Docket No. 96-102, Report and Order, FCC 97-5, 12 FCC Rcd 1576 (1997), at ¶ 46.

> and transitioning of unlicensed and licensed microwave links. There were no harmful interference cases caused by compliant high-gain point-to-point systems[.][13]

The RADWIN Petition includes an interference analysis that examines the interference potential of U-NII devices operating with modern beamforming transmit antennas. That analysis demonstrates that, "the interference generated by point-to-multipoint devices operating with multiple directional beams utilizing beamforming technologies and operating at the power limits of point-to-point devices operating in the same band, would not be higher than the interference generated by legacy point-to-point devices operating with directional antennas or point-to-multipoint devices utilizing legacy sectorized wide-beam antennas. And in many cases, the interference risk would be significantly lower."[14]

As such, the Commission should seize the opportunity to enhance the public interest benefits of these unlicensed U-NII devices by granting the relief the RADWIN Petition seeks.

[13] *2014 U-NII Order*, at ¶ 112.

[14] Petition at 7.

Conclusion

For the foregoing reasons, Alaska Communications urges the Commission to grant the RADWIN Petition and amend Section 15.407(a) of its rules, 47 C.F.R. § 15.407(a), as proposed therein.

Respectfully submitted,

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Certificate of Service

I, Richard R. Cameron, hereby certify that, pursuant to Sections 1.405 and 1.47 of the Commission's rules, 47 C.F.R. §§1.405 and 1.47, I have served the foregoing "Comments of Alaska Communications Internet, LLC," in RM No. 11812, by electronic mail to the following, as counsel for RADWIN Ltd.:

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